



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/628,424

07/29/2003

Jeffrey A. Read

ARL 01-37

5300

21364 7590 12/12/2008
U S ARMY RESEARCH LABORATORY
ATTN AMSRL CS CC IP
2800 POWDER MILL RD
ADELPHI, MD 207831197

EXAMINER

RHEE, JANE J

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

12/12/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/628,424	Applicant(s) READ, JEFFREY A.	
	Examiner JANE RHEE	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/4/08</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Rejections Withdrawn

1. The 35 U.S.C 102(e) rejection of claims 13-17 anticipated by Narang et al. has been withdrawn due to applicant's argument filed on 9/4/08.

New Rejection

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abraham et al. (5510209) in view of Narang et al. (US6991876).

As to claims 13-17, Abraham et al. discloses a lithium oxygen battery comprising an electrolyte solution, the battery comprising a lithium metal containing anode (col. 2 lines 21-33), a cathode comprising carbon (col. 2 lines 33), the electrolyte comprising a lithium salt LiPF₆ (col. 3 lines 6), and a non-aqueous solvent comprising ethylene carbonate (col. 3 line 7).

Abraham fail to disclose a nonaqueous solvent having an oxygen solubility of greater than 0.1632 O₂/cc solvent at STP consisting of DMC, DPC, DEC, EMC, THF, or DME.

Narang et al. teaches a nonaqueous solvent consisting of DMC and ethylene carbonate for the purpose of allowing the battery to operate at higher voltages and avoid parasitic reactions at the anode and cathode (col. 7 lines 27-29).

Therefore, it would have been obvious to one having ordinary skill in the art at the time applicant's invention was made to provide, Abraham with a nonaqueous solvent consisting of DMC and ethylene carbonate in order to allow the battery to operate at higher voltages and avoid parasitic reactions at the anode and cathode (col. 7 lines 27-29) as taught by Narang et al..

As to the group of solvents having an oxygen solubility of greater than 0.1632ccO₂/cc solvent at STP, since Narang discloses DMC the same material desired by the applicant comprising an oxygen solubility of greater than 0.1632ccO₂/cc solvent at STP, it is inherent that Narang discloses a non-aqueous solvent having an oxygen solubility of greater than 0.1632ccO₂/cc solvent at STP.

As to the solvents having an oxygen solubility of less than 1150cc O₂/cc at STP, since Abraham discloses ethylene carbonate, the same material desired by the applicant comprising the an oxygen solubility of less than 1150cc O₂/cc at STP, it is inherent that Abraham discloses a non aqueous solvent comprising an oxygen solubility of less than 1150cc O₂/cc at STP.

Abraham discloses wherein oxygen is reduced at a cathode surface of the metal oxygen battery to produce O⁻² or O₂⁻² ions and increase in the amount of dissolved oxygen in the electrolyte increases the specific capacity of the cathode (col. 3 lines 34-66).

Response to Arguments

3. Applicant's arguments with respect to claim 13-17 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JANE RHEE whose telephone number is (571)272-1499. The examiner can normally be reached on M-F 9-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jane Rhee/
Examiner, Art Unit 1795